

Reptiles of the Parque Estadual de Itapuã, state of Rio Grande do Sul, southern Brazil

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ABSTRACT: Herein we provide a list of reptiles from *Parque Estadual de Itapuã*, a conservation unit of integral protection located in the municipality of Viamão, state of Rio Grande do Sul, southern Brazil and inserted in the domains of the Pampa Biome. The study was carried out from February 2003 to July 2004. We recorded 39 species: 23 snakes, eight lizards, four testudines, three amphisbaenians and one crocodilian. Through the knowledge of the species in the area, we justify the importance of preserving this important natural remnant.

INTRODUCTION

The Pampa Biome is present in Argentina, Brazil and Uruguay. In Brazil, it is restricted to the state of Rio Grande do Sul, covering the southern part of the state, occupying 63% of its territory (IBGE 2004). In recent decades this biome has suffered severe degradation process, mainly with the intensive agricultural activities as well as the suppression of field areas for the development of forestry. Rio Grande do Sul has currently 104 conservation units, among federal, state, municipal, and private areas, covering only 3.4% of the total area of the state, and less than half of these areas are located in the Pampa Biome (SCP 2011).

The *Parque Estadual de Itapuã* (PEI), created in 1973, is a conservation unit of integral protection inserted in the Pampa Biome. It presents a natural physiognomy that is still well preserved, sheltering a wide variety of environments: granitic hills covered with forests and rocky fields, beaches, islands and *restinga* areas, with sand dunes, *restinga* forests, swamps, and lagoons.

With the objective of contributing towards increasing knowledge of the reptile fauna of the PEI we developed an inventory of the reptiles occurring in the different environments of the area. In addition to the field inventory, previous records for the Park were also considered, obtained through examination of literature and scientific collections in order to provide a complete list of the current species richness of the area. Through the knowledge of species of the PEI we justify the importance of preserving this important remnant of the Pampa.

MATERIALS AND METHODS

Study site

The PEI (30°23' S, 51°00' W; Figure 1) has an area of 5,566.50 ha and is located on the margins of the Guaíba Lake and Patos Lagoon, in the municipality of Viamão, state of Rio Grande do Sul, southern Brazil. The vegetation of the Park is composed of three phytophysiognomies: Semideciduous forest, steppe, and pioneer formation

areas (IBGE 1992).

Data Collection

The fieldwork was carried out from February 2003 to July 2004, three times a month, lasting one day, from morning until early evening, totaling a sampling effort of 432 hours/man. Specimens were recorded by active-searching method (Franco *et al.* 2002). In addition to this method we also had the cooperation of other people (Park staff and other researchers) that registered through photographs reptile specimens occasionally found in the Park during the study period.

To complete the species list of the study area we used records from literature and scientific collections. The literature records are reported in Rio Grande do Sul (1997) and Souza-Filho (2003), highlighting that were only considered the species found in the Park limits. Museum records were obtained through examination of the herpetological collections of the *Departamento de Zoologia*



FIGURE 1. Map showing the location of the Parque Estadual de Itapuã in the state of Rio Grande do Sul, southern Brazil (dot).

da Universidade Federal do Rio Grande do Sul (UFRGS) and Museu de Ciências e Tecnologia da Pontifícia Universidade Católica do Rio Grande do Sul (MCP) (Appendix 1).

Species not previously reported to the PEI, when possible, were collected (collection permit IBAMA number 064/04-RAN) and deposited in the herpetological collection of the *Departamento de Zoologia da Universidade Federal do Rio Grande do Sul* (UFRGS; Appendix 2).

The identification of the species was based in Lema (1994) and in subsequent taxonomic revisions (Avila-Pires 1995; Silva Jr. and Sites Jr. 1999; Franco and Ferreira 2002; Verrastro *et al.* 2003; Giraudo *et al.* 2006). The taxonomic nomenclature herein follows Bérnils and Costa (2011), and Carrasco *et al.* (2012) (for genus *Bothrops*).

RESULTS AND DISCUSSION

A total of 39 species of reptiles were recorded at PEI – 23 snakes: Leptotyphlopidae (n = 1), Colubridae (19), Elapidae (1), and Viperidae (2); eight lizards: Liolaemidae (1), Gekkonidae (1), Anguidae (1), Teiidae (3), Gymnophthalmidae (1), and Scincidae (1); three Amphisbaenidae; four chelonians: Emydidae (1) and Chelidae (3); and one Alligatoridae (Table 1). Photographs of some species are in Figures 2 and 3.

Four species found during the field work: *Caiman latirostris*, *Bothrops jararaca*, *Psomophis obtusus* and *Thamnodynastes hypoconia*, represent new records for the Park, being recorded only one individual of each species during the study period. *Caiman latirostris* was observed on the margins of the Patos Lagoon, at the *Praia de Fora*. The occurrence of this species in other sites of PEI, such as the *Lagoa Negra* and the *Lagoinha*, is reported by Park staff, but does not corroborate our records. *Bothrops jararaca* was found in forest environment, at the *Praia da Pedreira*. *Psomophis obtusus* and *T. hypoconia* were recorded in *restinga* environments, the former in the sand dunes and the latter in *restinga* forest. Museum records added another two species that, so far, were also not registered to the PEI: *Epictia munoai* and *Tantilla melanocephala*, but there is no indication of the environment in which these species were found.

The 39 species found represent 33% of the 118 species registered to the state of Rio Grande do Sul (HERPETOLOGIA UFRGS 2010). The majority of the observed species present wide distribution along the state, occurring mainly in open areas (Lema 1994).

Comparing the number of species of reptiles recorded in PEI with other conservation units studied in Rio Grande do Sul, the Park presents the highest species richness. Twenty nine species of reptiles were registered to the *Parque Nacional de Aparados da Serra*, located in the northeastern region of the state (Deiques *et al.* 2007) and 21 to the *Estação Ecológica do Taim*, situated in the southeastern part of Rio Grande do Sul (Gomes and Krause 1982).

Among the species found at PEI, the lizard *Liolaemus arambarensis* stands out since this species is endemic to the state of Rio Grande do Sul and to the Pampa Biome, inhabiting exclusively areas of sandy *restinga* in the northwestern region of the Patos Lagoon, in the municipality of Arambaré, to the south, to the municipality of Barra do Ribeiro, to the north, and Viamão, to the east of

the Guaíba Lake mouth (Verrastro *et al.* 2003).

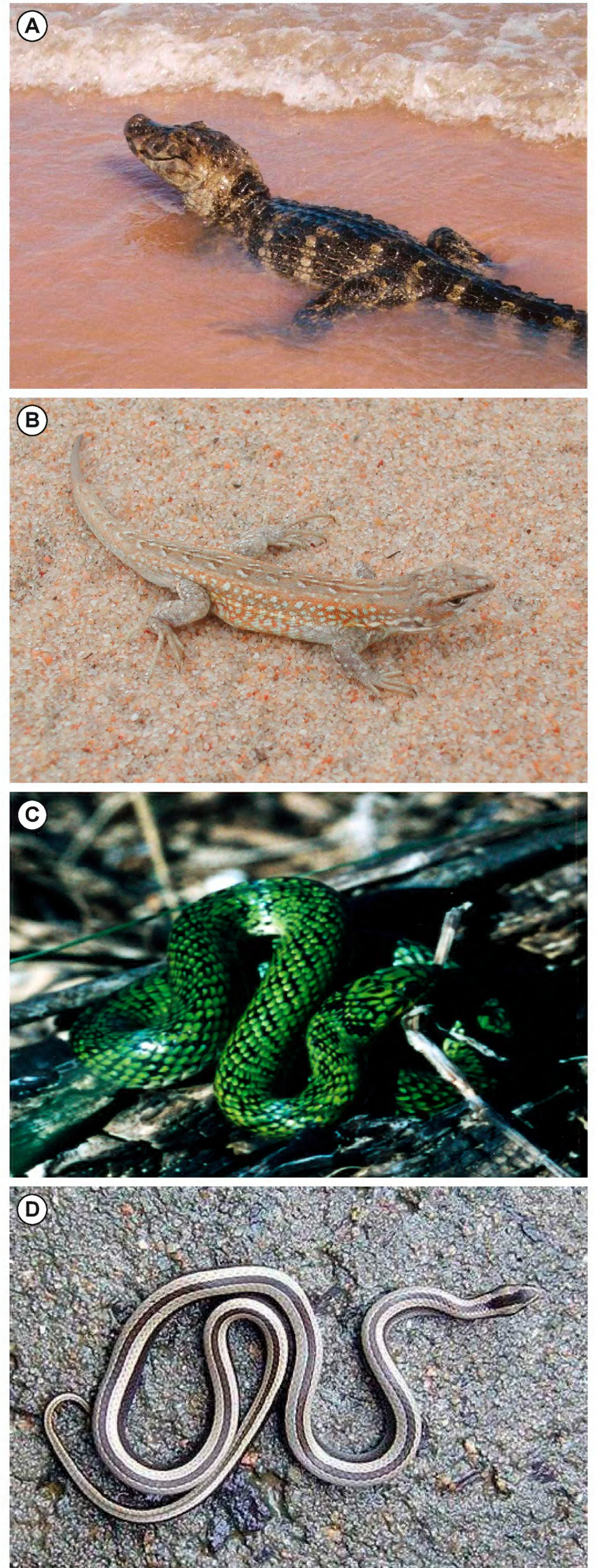


FIGURE 2. Some species of reptiles recorded at Parque Estadual de Itapuã, state of Rio Grande do Sul, southern Brazil: A) *Caiman latirostris* (Photo by A. Scherer); B) *Liolaemus arambarensis* (Photo by L. Verrastro); C) *Liophis poecilogyrus* (Photo by G.A. de Souza Filho); D) *Psomophis obtusus* (Photo by L. Verrastro).



FIGURE 3. Some species of reptiles recorded at Parque Estadual de Itapuã, state of Rio Grande do Sul, southern Brazil: A) *Oxyrhopus rhombifer*; B) *Sibynomorphus cf. neuwiedi*; C) *Xenodon merremii*; D) *Micrurus altirostris*; E) *Bothrops jararaca*; Photos by A.A. Witt.

With regard to the environments of the Park, the *restinga* presents the highest species richness and some species found in the area are characteristic of the sandy *restinga* environments (*Cnemidophorus lacertoides*, *Phalotris lemniscatus* and *Xenodon dorbignyi*) or even endemic to this habitat (*Liolaemus arambarensis*). The sandy *restinga* environment in Rio Grande do Sul is present in the eastern portion of the state, from the border with the state of Santa Catarina to Uruguay. It constitutes an increasingly rare landscape, which in recent years has suffered intense change resulting from human activities. Among the main threats to this environment are the housing boom, the removal of sand, and the contamination of the soil and water bodies. These factors, in addition to modifying the landscape, can have a direct influence on the

fauna, causing population declines or local extinctions due to loss and degradation of the natural environment (Di-Bernardo *et al.* 2003).

Despite the great representation of the Pampa Biome in the state of Rio Grande do Sul, few areas of its territory are inserted in conservation units of integral protection, demonstrating the importance of PEI to preserve the rich and threatened biodiversity of this biome. We also emphasize the importance of conservation of the *restinga* environment of the Park, the most representative habitat of the local reptile fauna, which should be considered a priority area of preservation within the PEI. The new records of species in the Park area demonstrates the need for more studies in the region.

TABLE 1. Reptiles recorded at Parque Estadual de Itapuã, municipality of Viamão, Rio Grande do Sul state, Brazil, showing the habitat and the record type of the reptile species found in the Park. Habitat: DA = disturbed area (Park entrance, with native forest, eucalyptus woods, and remains of housing); FO = forest; IJ = Junco Island; LA = lago (small lake located after the Park entrance); LG = Guaíba Lagoon; LP = Patos Lagoon; RE = restinga; RF = rocky fields. Record type: AS = active-searching; LR = literature record; MR = museum record; PR = photographic record.

TAXA	HABITAT	RECORD TYPE
TESTUDINES		
Emydidae		
<i>Trachemys dorbigni</i> (Duméril and Bibron, 1835)	LA; LG; LP	AS; LR
Chelidae		
<i>Acanthochelys spixii</i> (Duméril and Bibron, 1835)	LA	LR
<i>Hydromedusa tectifera</i> Cope, 1869	LA	LR; MR
<i>Phrynops hilarii</i> (Duméril and Bibron, 1835)	LA; LG; LP	AS; LR
CROCODYLIA		
Alligatoridae		
<i>Caiman latirostris</i> (Daudin, 1802)	LP	PR
SQUAMATA		
Liolaemidae		
<i>Liolaemus arambarensis</i> Verrastro, Veronese, Bujes and Dias-Filho, 2003	RE	AS; LR; MR
Gekkonidae		
<i>Hemidactylus mabouia</i> (Moreau de Jonnès, 1818)	FO; RE	AS; LR; MR
Anguidae		
<i>Ophiodes</i> sp.	FO; RE	LR
Teiidae		
<i>Cnemidophorus lacertoides</i> Duméril and Bibron, 1839	RE	AS; LR; MR
<i>Teius oculatus</i> (D’Orbigny and Bibron, 1837)	RE; RF	AS; LR; PR
<i>Tupinambis merianae</i> (Duméril and Bibron, 1839)	FO; IJ; RE; RF	AS; LR; MR; PR
Gymnophthalmidae		
<i>Cercosaura schreibersii</i> Wiegmann, 1834	FO; RE	AS; LR; MR
Scincidae		
<i>Mabuya dorsivittata</i> Cope, 1862	FO; RF	AS; LR
Amphisbaenidae		
<i>Amphisbaena kingii</i> (Bell, 1833)	RE	LR; MR
<i>Amphisbaena prunicolor</i> (Cope, 1885)	IJ	LR
<i>Amphisbaena trachura</i> Cope, 1885	DA; FO; RE	AS; LR; MR
Leptotyphlopidae		
<i>Epictia munoai</i> (Orejas-Miranda, 1961)	-	MR
Colubridae		
<i>Chironius bicarinatus</i> (Wied, 1820)	FO; RE	LR; PR
<i>Helicops infrataeniatus</i> (Jan, 1865)	IJ; LG; RE	LR; MR; PR
<i>Liophis almadensis</i> (Wagler, 1824)	DA	LR
<i>Liophis flavifrenatus</i> (Cope, 1862)	RE	AS; LR
<i>Liophis poecilogyrus</i> (Wied, 1825)	RE	AS; LR; MR
<i>Liophis semiaureus</i> (Cope, 1862)	DA; RE	LR; MR; PR
<i>Mastigodryas bifossatus</i> (Raddi, 1820)	DA; FO; RE	AS; LR; MR
<i>Oxyrhopus rhombifer</i> Duméril, Bibron and Duméril, 1854	DA; FO; RE	LR; MR; PR
<i>Phalotris lemniscatus</i> (Duméril, Bibron and Duméril, 1854)	RE	LR; MR
<i>Philodryas aestiva</i> (Duméril, Bibron and Duméril, 1854)	RE	LR
<i>Philodryas olfersii</i> (Lichtenstein, 1823)	FO; RF; RE	AS; LR; MR; PR
<i>Philodryas patagoniensis</i> (Girard, 1858)	DA; FO; RE	AS; LR
<i>Psomophis obtusus</i> (Cope, 1864)	RE	AS
<i>Sibynomorphus</i> cf. <i>neuwiedi</i> (Ihering, 1911)	DA; RE	LR; PR
<i>Taeniophallus occipitalis</i> (Jan, 1863)	RE	LR; MR
<i>Tantilla melanocephala</i> (Linnaeus, 1758)	-	MR
<i>Thamnodynastes hypoconia</i> (Cope, 1860)	RE	AS
<i>Xenodon dorbignyi</i> (Duméril, Bibron and Duméril, 1854)	RE	LR; MR
<i>Xenodon merremii</i> (Wagler, 1824)	DA; FO; RE	LR; MR; PR
Elapidae		
<i>Micrurus altirostris</i> (Cope, 1859)	DA; FO; RF	LR; PR
Viperidae		
<i>Bothrops jararaca</i> (Wied, 1824)	FO	PR
<i>Bothrops pubescens</i> (Cope, 1870)	DA; FO; RE	LR; MR; PR

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LITERATURE CITED

- Avila-Pires, T.C.S. 1995. Lizards of Brazilian Amazonian (Reptilia: Squamata). *Zoologische Verhandelingen Leiden* 299: 1-706.
- Bérnils, R.S. and H.C. Costa (org.). 2011. *Brazilian reptiles – List of species*. Electronic Database accessible at <http://www.sbherpetologia.org.br/>. Captured on 22 July 2012.
- Carrasco, P.A., C.I. Mattoni, G.C. Leynaud and G.J. Scrocchi. 2012. Morphology, phylogeny and taxonomy of South American bothropoid pitvipers (Serpentes, Viperidae). *Zoologica Scripta* 41(2): 109-124.
- Deiques, C.H., L.F. Stahnke, M. Reinke and P. Schmitt. 2007. *Guia Ilustrado - Anfíbios e Répteis do Parque Nacional de Aparados da Serra, Rio Grande do Sul, Santa Catarina, Brasil*. Pelotas: USEB. 120 p.
- Di-Bernardo, M., M. Borges-Martins and R.B. Oliveira. 2003. Répteis; p. 165-188 *In* C.S. Fontana, G.A. Bencke and R.E. Reis (eds.). *Livro vermelho da fauna ameaçada de extinção no Rio Grande do Sul*. Porto Alegre: EDIPUCRS.
- Franco, F.L. and T.G. Ferreira. 2002. Descrição de uma nova espécie de *Thamnodynastes* Wagler, 1830 (Serpentes, Colubridae) do nordeste brasileiro, com comentários sobre o gênero. *Phyllomedusa* 1(2): 57-74.
- Franco, F.L., M.G. Salomão and P. Auricchio. 2002. Répteis; p. 75-115 *In* P. Auricchio and M.G. Salomão (eds.). *Técnicas de coleta e preparação de vertebrados para fins científicos e didáticos*. São Paulo, Arujá. Instituto Pau Brasil de História Natural.
- Giraud, A.R., V. Arzamendia and P. Cacciali. 2006. Geographic variation and taxonomic status of the southernmost populations of *Liophis miliaris* (Linnaeus, 1758) (Serpentes: Colubridae). *Herpetological Journal* (16): 213-220.
- Gomes, N. and L. Krause. 1982. Lista preliminar de répteis da Estação Ecológica do Taim, Rio Grande do Sul. *Revista Brasileira de Zoologia* 1(1): 71-77.
- HERPETOLOGIA UFRGS. 2010. *Laboratório de Herpetologia da Universidade Federal do Rio Grande do Sul. On line. Versão 1.0, Novembro 2010*. Electronic Database accessible at <http://www.ufrgs.br/herpetologia/>. Captured on 28 February 2012.
- IBGE (Instituto Brasileiro de Geografia e Estatística). 1992. Manual técnico da vegetação brasileira. *Séries Manuais técnicos em geociências* (1): 92 p.
- IBGE (Instituto Brasileiro de Geografia e Estatística). 2004. *Mapa de Biomas do Brasil*. Electronic Database accessible at <http://www.ibge.gov.br/>. Captured on 28 February 2012.
- Lema, T. 1994. Lista comentada dos répteis ocorrentes no Rio Grande do Sul, Brasil. *Comunicações do Museu de Ciências da PUCRS, Série Zoologia* 7: 41-150.
- Rio Grande do Sul. 1997. *Plano de Manejo do Parque Estadual de Itapuã - RS*. Porto Alegre: Departamento de Recursos Naturais Renováveis. 158 p.
- SCP (Secretaria da Coordenação e Planejamento). 2011. *Atlas Sócioeconômico do Rio Grande do Sul*. Electronic Database accessible at <http://www.scp.rs.gov.br/>. Captured on 28 February 2012.
- Silva Jr., N.J. and J.W. Sites Jr. 1999. Revision of the *Micrurus frontalis* complex (Serpentes: Elapidae). *Herpetological Monographs* 13: 142-194.
- Souza-Filho, G.A. de. 2003. Contribuição para o conhecimento das espécies de répteis ocorrentes no Parque Estadual de Itapuã, município de Viamão, Rio Grande do Sul, Brasil. *Comunicações do Museu de Ciências e Tecnologia da PUCRS, Série Zoologia* 16(2): 245-247.
- Verrastro, L., L. Veronese, C.S. Bujes and M.M. Dias Filho. 2003. A new species of *Liolaemus* from Southern Brazil (Iguania: Tropiduridae). *Herpetologica* 59(1): 252-277.

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APPENDIX 1. Specimens examined from *Parque Estadual de Itapuã* housed in the herpetological collections of the *Departamento de Zoologia da Universidade Federal do Rio Grande do Sul* (UFRGS) and *Museu de Ciências e Tecnologia da Pontifícia Universidade Católica do Rio Grande do Sul* (MCP).

Chelidae: *Hydromedusa tectifera* (UFRGS 2112); **Liolaemidae:** *Liolaemus arambarensis* (UFRGS 2272); **Gekkonidae:** *Hemidactylus mabouia* (UFRGS 2116, 2253; MCP 11315); **Teiidae:** *Cnemidophorus lacertoides* (UFRGS 3500), *Tupinambis merianae* (UFRGS 2459; MCP 4122, 4142); **Gymnophthalmidae:** *Cercosaura schreibersii* (UFRGS 2268; MCP 11314); **Amphisbaenidae:** *Amphisbaena kingii* (UFRGS 2244), *Amphisbaena trachura* (UFRGS 2252); **Leptotyphlopidae:** *Epictia munoai* (MCP 12064); **Colubridae:** *Helicops infrataeniatus* (UFRGS 2115), *Liophis semiaureus* (UFRGS 2273), *Liophis poecilogyus* (UFRGS 2256), *Mastigodryas bifossatus* (UFRGS 2242, 2275), *Oxyrhopus rhombifer* (UFRGS 2257, 2258), *Phalotris lemniscatus* (UFRGS 2251), *Philodryas olfersii* (UFRGS 2269), *Taeniophallus occipitalis* (UFRGS 3501), *Tantilla melanocephala* (MCP 6722), *Xenodon dorbignyi* (MCP 1628), *Xenodon merremii* (UFRGS 2250); **Viperidae:** *Bothrops pubescens* (UFRGS 2274).

APPENDIX 2. Voucher specimens.

Psomophis obtusus: UFRGS 3694; *Thamnodynastes hypoconia*: UFRGS 3695.